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# NASA Procedural Requirements

**COMPLIANCE IS MANDATORY**

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2001

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**Subject: Energy Efficiency and Water Conservation w/Change 1 (3/30/04)**

**Responsible Office: Environmental Management Division**

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## CHAPTER 6. Energy-Efficient Technologies

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### 6.1 Technology Requirements

6.1.1 Energy-efficient technologies enable significant energy savings, prevent pollution, and reduce waste without compromising the quality of performance. Several Federal programs have been implemented to foster the deployment of energy-efficient technologies and educational support to ensure technology acceptance. The following describes required measures regarding acquisition and use of energy-efficient technologies in NASA facilities.

### 6.2 Reserved.

### 6.3 Heating, Ventilating, and Air Conditioning (HVAC)

6.3.1 General. When acquiring energy-using products, including building components and office equipment, Federal agencies are required to select ENERGY STAR® products and products that are in the upper 25 percent of energy efficiency where cost-effective. ENERGY STAR® and other Federal product efficiency recommendations are maintained on the DOE Federal Energy Management Program (FEMP) Web site at <http://www.eren.doe.gov/femp/procurement/begin.html#bottom>. When specific product efficiency recommendations are not available, the prescriptive standards established in 10 CFR 435 should be followed.

6.3.2 Reserved.

6.3.3 Reserved.

6.3.3.1 Reserved.

6.3.3.2 Reserved.

6.3.3.3 Reserved.

6.3.4 Reserved.

6.3.5 Reserved.

6.3.5.1 Reserved.

a. Reserved.

b. Reserved.

c. Reserved.

6.3.5.2 Reserved.

6.3.6 Reserved.

6.3.6.1 Reserved.

6.3.6.2 Reserved.

6.3.6.3 Reserved.

6.3.6.4 Reserved.

6.3.7 Reserved.

6.3.8 Reserved.

6.3.8.1 Reserved.

6.3.8.2 Reserved.

6.3.9 Reserved.

6.3.9.1 Reserved.

6.3.9.2 Reserved.

6.3.9.3 Reserved.

a. Reserved.

b. Reserved.

c. Reserved.

6.3.10 Reserved.

6.3.10.1 Reserved.

6.3.10.2 Reserved.

6.3.11 Reserved.

6.3.11.1 Reserved.

## **6.4 Lighting**

6.4.1 Reserved.

6.4.2 Reserved.

6.4.2.1 Incandescent Lamps. Incandescent lamps have a low initial cost and good color-rendering properties, but they typically have the shortest life of all lamps and are the least efficient with efficacies in the range of 5 to 20 lumens per watt. The use of these lamps should be restricted to situations when more efficient lamps cannot attain the desired color, lumens, or distribution characteristics.

6.4.2.2 Reserved.

6.4.2.3 Reserved.

6.4.2.4 Reserved.

6.4.2.5 Reserved.

6.4.2.6 Reserved

6.4.3 Ballasts

6.4.3.1 Reserved.

6.4.3.2 Federal regulations established in 1988 apply to all ballasts manufactured on or after January 1, 1990, and to all ballasts sold by manufacturers on or after April 1, 1990, and to all ballasts incorporated into luminaire on or after April 1, 1991. These regulations forbid the use of "standard" electromagnetic ballasts and require the use of high-efficiency, energy-saving electromagnetic or electronic ballasts.

6.4.4 Lamps and Ballast Disposal. Lighting retrofits will involve the disposal of lamps and ballasts. Due to the mercury content of fluorescent lamps and the PCB content of ballasts, special handling is required. 40 CFR 761 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) contain

regulations on the proper disposal of PCBs and other hazardous waste. Each State has varying regulations and standards for the removal, handling, and disposal of hazardous waste. It is best to contact the local hazardous waste agency for proper instructions.

6.4.5 Exit Lights. Self-luminous signs that contain tritium gas, a low-level isotope of hydrogen shall note be installed because of potential disposal liability issues. To ensure adequate visibility, exit signs must meet or exceed visibility guidelines established by the National Fire Protection Association (NFPA) Life Safety Code 101, and other applicable building code requirements.

6.4.6 Reserved.

6.4.6.1 Reserved.

6.4.6.2 Reserved.

6.4.6.3 Reserved.

6.4.6.4 Reserved.

## **6.5 Reserved.**

6.5.1 Reserved.

6.5.1.1 Reserved.

6.5.1.2 Reserved.

6.5.1.3 Reserved.

6.5.1.4 Reserved.

6.5.1.5 Reserved.

## **6.6 Reserved.**

6.6.1 Reserved.

6.6.2 Reserved.

6.6.2.1 Reserved.

6.6.2.2 Reserved.

6.6.2.3 Reserved.

6.6.3 Reserved.

6.6.3.1 Reserved.

6.6.3.2 Reserved.

6.6.3.3 Reserved.

6.6.4 Reserved.

## **6.7 Reserved.**

6.7.1 Reserved.

6.7.2 Reserved.

## **6.8 Reserved.**

6.8.1 Reserved.

6.8.2 Reserved

a. Reserved.

b. Reserved.

c. Reserved.

6.8.3 Reserved.

6.8.3.1 Reserved.  
6.8.3.2 Reserved.  
6.8.3.3 Reserved.  
6.8.3.4 Reserved.  
6.8.3.5 Reserved.  
6.8.3.6 Reserved.  
6.8.3.7 Reserved.

## **6.9 Reserved.**

6.9.1 Reserved.  
6.9.2 Reserved.  
6.9.2.1 Reserved.  
6.9.2.2 Reserved.  
6.9.2.3 Reserved.  
6.9.2.4 Reserved.  
6.9.2.5 Reserved.

## **6.10 Reserved.**

6.10.1 Reserved.  
6.10.1 Reserved.

## **6.11 Reserved.**

6.11.1 Reserved.  
a. Reserved.  
b. Reserved.  
c. Reserved.  
6.11.1.1 Reserved.  
6.11.1.2 Reserved.  
6.11.1.3 Reserved.  
6.11.1.4 Reserved.  
6.11.2 Reserved.  
6.11.3 Reserved  
a. Reserved.  
b. Reserved.  
c. Reserved.  
d. Reserved.  
e. Reserved.  
6.11.3.1 Reserved  
a. Reserved.  
b. Reserved.

## 6.12 Reserved.

- 6.12.1 Reserved.
- 6.12.2 Reserved.
- 6.12.3 Reserved.

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